Solbourne and Matsushita: How a good idea went bad
PAGE 86

Compaq and Conner take the guesswork out of alliances
PAGE 137

Wanted: U.S. contenders for $4 billion LCD market
PAGE 11

A CAHNERS PUBLICATION

Electronic Business

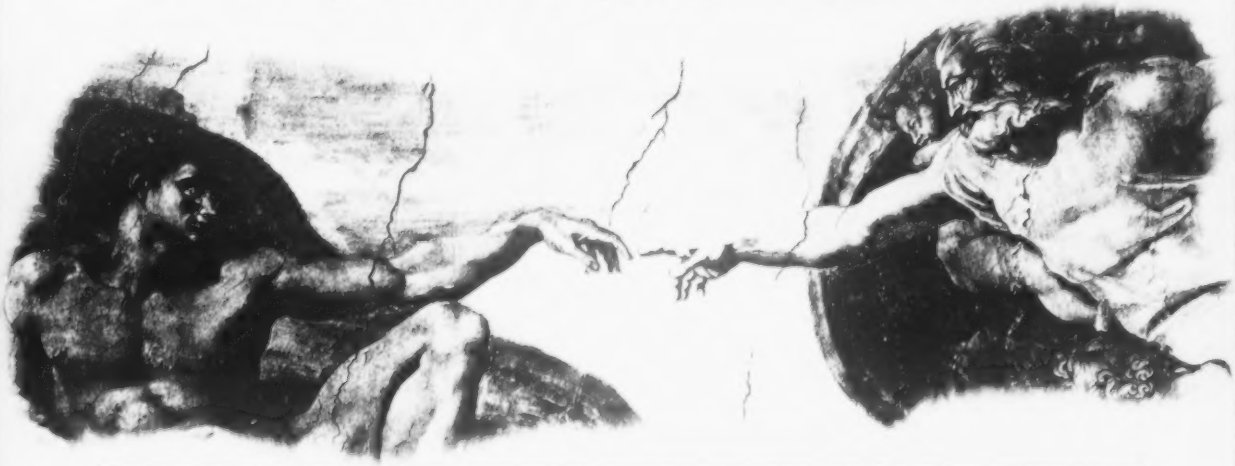
FOR THE MANAGEMENT TEAM IN ELECTRONICS, COMPUTER, AND SYSTEMS COMPANIES WORLDWIDE

MARCH 30, 1992

3rd Annual CEO Survey

STRATEGIC ALLIANCES

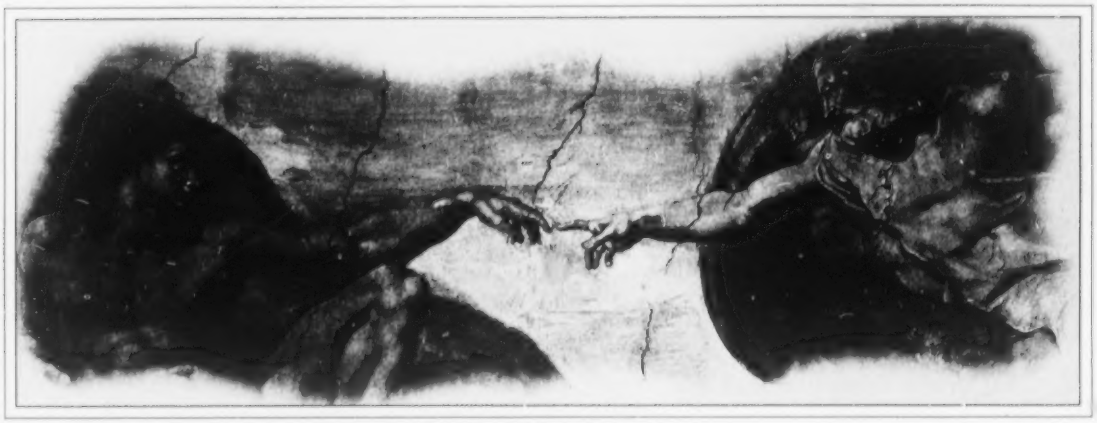
Exclusive Survey of Chief Executives by Electronic Business and Ernst & Young



How they work How they fail What's in the future

Electronic Business

VOLUME 18 NUMBER 6 — FOR THE MANAGEMENT TEAM IN ELECTRONICS, COMPUTER, AND SYSTEMS COMPANIES-WORLDWIDE — MARCH 30, 1992



Creation of Man, circa 1510 by Michelangelo Buonarroti

COVER STORY

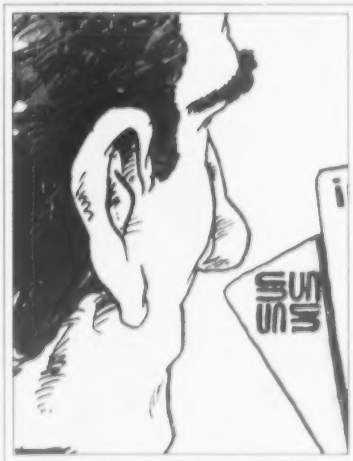
37 How Strategic Alliances work

They can be hard on the nerves, they often don't pay off for years, and they radically upset many of our most hallowed business models—especially the ones based on the "I-win-you-lose" mentality. Why do so many companies line up for such abuse? In some cases, it's the only way to survive

UPFRONT

Business Trends

11 Just how safe a bet is ACE?; Videoconference equipment prices keep sliding; Don't write off a U.S. role in LCD equipment market; Mentor Graphics joins the corporate day-care elite; DEC's Alpha RISC chip faces an uphill battle; Deal watch: M&A activity emerges from the doldrums; Business advice that's worth more than it costs



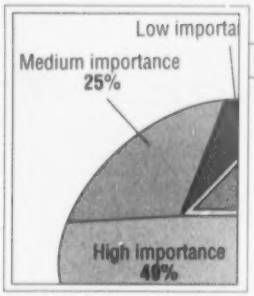
PAGE 11 Just how safe a bet is ACE?

Companies to Watch

21 Southwest Network Services brings digital data networks to small companies; Exemplar Logic creates logic synthesis tools for FPGAs; Tusk Inc. creates the first all-terrain pen computer

Business Barometer

23 **Semiconductors**
Chip sales to rise 12% this year



PAGE 38 How important are alliances?

PAGE 113 Roland Utenwoldt, Mercedes-Benz North America product planning manager

PAGE 86 How the MEI and Solbourne alliance failed

CEO REPORT

Survey

38 **455 electronics execs say rugged individualism doesn't cut it these days**
Reason: You need teamwork to penetrate new markets, develop products faster, and improve access to technology

Commentary

83 **A new mind-set for electronics executives**
Alliance-building is far more than the latest fad. It has become fundamental to the way electronics companies do business

Strategic alliances

86 **How a good partnership goes bad**
Matsushita pumped $90 million into Solbourne, but poor execution and conflicting goals have prevented the partnership from working as planned

103 **Better together: Big Blue and little Easel**
How a small software company forged a successful alliance with IBM in record-breaking time. Persistence was key

Strategic alliances

113 **Mercedes-Benz and Bose thought they knew everything. Surprise!**
It took six years, and a few culture clashes, for them to develop the "ultimate" sound system for the "ultimate" luxury car

137 **A buyer-supplier alliance that really works**
Conner Peripherals and Compaq Computer show how start-ups can cut their risks while supplying big customers with cutting-edge design

Speakout

145 **Words from on high**
Execs are far from unanimous on what government can do, whether megadeals are worth it, and what's ahead for alliances

Alliances' future

153 **The "Virtual Enterprise": A new success model**
Vertical integration is out. Today's markets require a broad fabric of alliances for effectively managing the entire value chain

DEPARTMENTS

Inside Business

7 We all need partners

My View

161 Customer delight. And more

Company Index

166 Companies covered in this issue

Advertiser Index

167 Advertisers covered in this issue

Viewpoint

168 ACE's critics are right, but. . .

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We all need partners

Senior editor
Elizabeth B. Baatz

HOW IMPORTANT are strategic alliances for achieving success, and what makes them work?

To a considerable extent, we at ELECTRONIC BUSINESS know the answers to these questions—not just from the results of this year's CEO survey, but also from our strategic alliance with the respected professional services and consulting firm, Ernst & Young. For the past three years, we have jointly produced an annual CEO survey and report.

Let's start with question number one, which really is, "Why do it at all?" The truth is simple. Together, we've produced a more informative, more profitable product than either of us could have done alone.

ELECTRONIC BUSINESS has tremendous reporting resources, diverse industry contacts, and a large body of knowledge about the electronics industry. We're also good at whipping our resources into shape quickly. Ernst & Young has many of these same resources, plus it has the unique insight gained from an abundance of hands-on, problem-solving experience within the industry.

The challenge was—and is—to make those resources work together. That's not always easy. The key was, first, to set a concrete goal that was mutually beneficial. The CEO report in this issue is just that. It gives us both a competitive edge in the markets we serve.

The second key to success was to establish clear and constant communication between partners. Surprisingly, the survey results did not emphasize that, but our case histories did. In our alliance, we each assigned one person to oversee the project and coordinate activities. Senior editor Elizabeth Baatz did that for ELECTRONIC BUSINESS. Exceptional interpersonal skills and a background in economics made her a perfect bridge. Diane Galvin, a marketing manager for the High-Tech Group, was equally terrific as E&Y's link.

In the end, it took roughly one year, from planning to publication, to create the report that you will read inside. The special focus was changed once before deciding on the topic of strategic alliances. Creating, mailing, and interpreting the survey took about four months.

Together, we nearly burned out several fax machines, probably burned out a few staff members as well, and, yes, there were a couple of testy moments. All of that said, however, we think we produced not only a good report, but a better report than we did last year.

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STRATEGIES

Just how safe a bet is ACE?

IT'S BEEN ALMOST a year since a collective of systems vendors banded together to unveil a dual hardware/software platform they dubbed the Advanced Computing Environment (ACE), and despite mountains of ridicule from competing CISC and RISC camps, the initiative remains intact--albeit somewhat shaken. Potential users and OEMs are still trying to decide if ACE is a viable desktop system architecture that can achieve the market stature its members seek. A key indicator of its success will be the development rate of ACE-compliant software. Even high-powered ACE vendors such as Digital Equipment, Compaq, or Microsoft are not sure how quickly a software base could develop. Vendors outside the ACE collective are more skeptical; they complain that ACE is likely to create more confusion.

ACE members aren't just looking to create a "standard" desktop platform—they're also challenging head-on the establishment that Intel and Sun represent. The 280-odd ACE vendors intend to agree on a basic hardware/software platform, "standard enough" for widespread acceptance, but leaving room for application development by OEMs, software developers, and VARs. ACE, however, is still perceived by the software community as too general yet, ironically, too self-serving.

"They call [ACE] a consortium and expect us to act as a single body," complains Jim Billmeier, Mips Computer VP of software marketing. "The failure of ACE to date is that we have been unable to communicate [ACE objectives] effectively."

Critics charge that too many ACE members are simply using ACE to hedge bets on which architecture will be the next desktop standard. DEC, for example, is also delivering Macintosh systems, Windows-based 80x86 desktops, and its own RISC systems, plus committing to delivery of ACE Advanced RISC Computing systems.

Compaq, a central figure in ACE, may be considering non-ACE operating systems such as Nextstep Unix, which Next Computer is pushing into the Windows-dominated 80x86-based market. Compaq also withdrew a $150 million investment in ACE member Silicon Graphics, which would have allowed Compaq access to SGI's Mips RISC-based graphics-processing technology, catapulting them, in theory, into the Unix/RISC world. The withdrawal is viewed as a blow delivered by Compaq, an 80x86 CISC platform vendor, to Mips RISC.

ACE vendors, meanwhile, are left to fight aggressive anti-ACE marketing tactics on their own. Those tactics manifest themselves head-on, from Sun, or obliquely, from Intel, which will deliver the next 80x86 microprocessor, the 80586. "The real death blow to ACE will be Intel's 80586," says Computerland COO Ed Anderson, who contends there is no compelling need for the huge installed base of 80x86-compatible PC users to move to RISC platforms such as ACE's Mips R4000-based ARC as long as Intel delivers RISC-competitive chips.

Others, such as Opus Systems CEO Jim Katzman, contend ACE's survival depends on Microsoft and its Windows NT operating system. "Going from Windows to NT is a bigger jump than going from DOS to Windows. The rate of independent software development behind NT is really going to determine just how successful NT—and ACE—will be."

The IBM/Apple team also poses a threat if it can deliver RISC-based systems with IBM's RS/6000 processor and the Macintosh-leveraged Pink operating system from its software venture.

—David Webb in San Jose

MANAGEMENT TOOLS

Videoconference equipment prices continue downward

THANKS TO a flurry of low-cost product introductions, videoconferencing should soon begin migrating beyond the rarefied world of *Fortune* 500 conference rooms to a broader base of business users. While the equipment is becoming well within reach of small to midsize management budgets, the services needed for face-to-face conferencing remain pricey—sometimes even scarce.

Since January, solutions ranging from video attachments for PCs to scaled-down versions of $50,000-plus systems have debuted. Among them

is the Cameo Personal Video System, a video coder/decoder box from Compression Labs that allows Apple Macintosh PCs to support video communications in a screen window. It will cost $1,695 require an ISDN interface of two 64-Kilobit-per-second (Kbps) channels.

Hitachi America plans mid-year shipment of its CA-200 and DP-200 briefcase-size videoconferencing systems. The former, for $13,900, can be attached to any standard TV monitor; the latter, priced at $14,900, includes a built-in 11-inch monitor.

They can operate over an ISDN link or over switched 56-Kbps channels.

Other leading vendors, including PictureTel and VideoTelecom, have also unveiled downscaled products. Lower-priced systems, though, can only go so far in stimulating the market, warns Steve Sazegari, telecom analyst at Dataquest. As important is the widespread availability of high-speed networking services that videoconferencing requires.

ISDN-level services are not universally available, although switched 56-Kbps channels are more widespread. Digital videoconferencing systems need at least 56-Kbps transmission rates for acceptable quality; 112- to 384-Kbps channels are preferred. "The necessary networking services may not be available in some areas, or they may be too expensive for small companies," Sazegari says. Until that changes, low-cost videoconferencing systems won't realize their full market potential.

—Dwight B. Davis

MARKETS

Don't write off a U.S. role in LCD equipment market

SO FAR, THERE'S NO U.S. challenge to the Japanese lead in thin-film transistor liquid crystal displays (TFT LCDs), but the fast-growth market is driving a $5 billion demand for equipment and materials—and that race is still wide open to U.S. players.

Japanese TFT LCD leaders Sharp and NEC predict a $4 billion market for the displays by 1995; altogether, seven Japanese manufacturers are planning annual capacity of $800 million or more by then. This booming market will support about 30% annual growth in chips, materials, manufacturing, and test equipment, pushing the $1.5 billion market to $5.5 billion by 1995, estimates Nomura Research Institute and Sharp. The biggest opportunity is a potential $1.6 billion market for ICs to drive the displays, and color filters will also approach a $1 billion business. Altogether, materials such as liquid crystals, glass, film, filters, and back lights will amount to some $2.5 billion by mid-decade.

Mass production of the TFT displays is just ramping up this year in Japan, and so far no suppliers have a commanding lead. Japanese LCD makers are eagerly seeking equipment offering higher yields, lower costs, or better displays, such as production machinery made just for LCDs with higher throughput, lower working temperature for glass, cheaper color filters, and lower power drivers.

All the big Japanese names in IC equipment—Dainippon Screen, Nikon, and Canon—are working hard to be dominant players. However, U.S. production and test equipment makers are also making headway into the Japanese market: Applied Materials Japan offers CVD, sputtering, and etching equipment; MRS Technology sells steppers for LCD production; Micrion offers repair systems; and Photon Dynamics, Insystems, KLA Instruments, and Tencor are all talking with LCD makers.

Corning Glass Works, which dominates the market for the specialty non-alkali glass for TFT displays, and Texas Instruments Japan, a big supplier of drivers and assembles modules, are also pushing to become big global players.

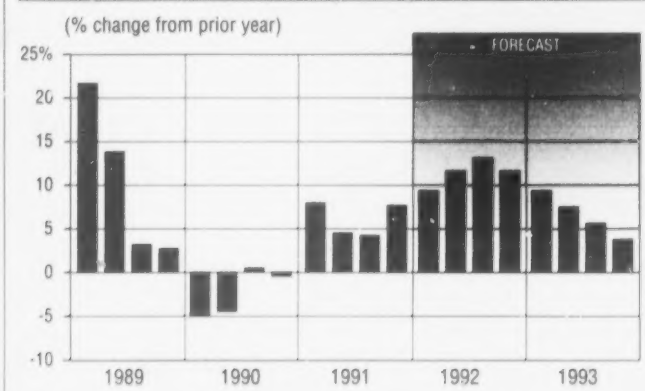
—Paula Doe in Japan

MANAGEMENT

Mentor Graphics joins the corporate day care elite

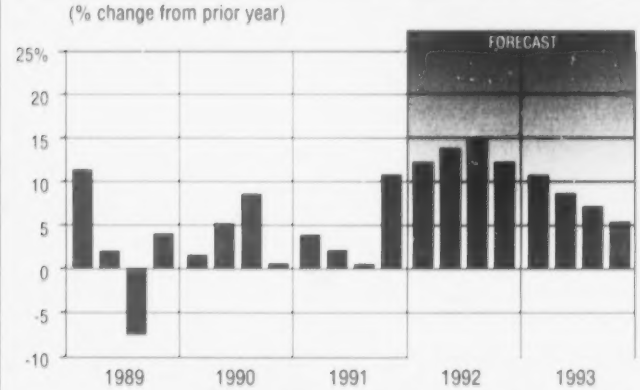
ONE OF MANAGEMENT'S top challenges in the 1990s is to find ways to accommodate a work force that is increasingly made up of two-income families, single par-

Chip sales pop up in the last quarter of '91...



Source: Semiconductor Industry Assn.; forecast: Cahners Economics

...as new orders for semiconductors heat up...



Source: Semiconductor Industry Assn.; forecast: Cahners Economics

...with a little help from 486-driven PC sales

Source: Commerce Department; forecast: Cahners Economics

SEMICONDUCTORS

Chip sales to rise 12% this year

NEWS OF THE chip industry's unfolding recovery has yet to hit the daily headlines, but it is here. Chip sales to the North American market swelled to $3.89 billion in the final quarter of 1991, up 8.2% over year-ago levels. New orders also surged 11.5% to $3.98 billion in the last three months of 1991, outracing our forecasted fourth-quarter growth rate of 6%. As a result, the book-to-bill ratio jumped to 1.08 in December.

The reason for the semiconductor industry's good numbers? The better-than-expected sales of the 486 PCs. Overall, U.S. computer and office equipment makers are expected to increase factory shipments by 4.2% this year, after a 1.5% drop in shipments the year before. According to researchers at the Data Analysis Group, sales of PCs are expected to top $38 billion in 1992 for a 7% annual gain. Sales of laptops, notebooks, and portable computers will be the biggest demand drivers for new chips. Portable computer sales are forecast to capture 11% of the small microcomputer market, and these sales are expected to soar 25% in 1993 to $5 billion.

It's not just the increase in computer sales that is behind the recent chip recovery. Last year, sales of cellular phones skyrocketed 48%, benefiting many semiconductor manufacturers, especially Motorola. And with only 3% of U.S. households owning a cellular phone, demand for them is expected to to swell. The Electronic Industries Association projects sales will climb 13% in 1992, to 3,500 units.

While the chip recovery in 1992 won't be on par with the big booms of 1988 and 1984, watch for sales to rise 12% this year and 7% next year. Not an explosive recovery, but a recovery nonetheless.

—Julie Handelman-Sagan

How strategic alliances work

Strategic alliances radically upset many of our old business models—especially those that hinge on secrecy and one-upsmanship. They call instead for such unfamiliar qualities as communication and dedication to "win-win" relationships.

Nevertheless, more and more U.S. electronics companies have no choice but to forge alliances with their customers, suppliers, and sometimes even their rivals. Driven by technological complexity, soaring costs, and mounting world competition, companies of every size are being compelled to reach out and link up—to differentiate themselves, to acquire new skills, and even just to survive.

PAGE 38

455 electronics execs say rugged individualism is fading

Here's why. Better penetration of new markets, faster product development, and improved access to technology

PAGE 83

A new mind-set for electronics executives

Strategic alliances are an essential part of the solutions that deliver total quality, shorter time-to-market, and more satisfied customers

PAGE 86

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PAGE 103

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CEO REPORT:

SURVEY

455 electronics execs say rugged individualism is fading

Here's why. Better penetration of new markets, faster product development, and improved access to technology

By Stephen E. Almassy and E. B. Baatz

During the past few years, strategic alliances have transformed the electronics industry. Once perceived as an option reserved only for the corporate giants, teaming up has become the spark that has ignited the imaginations of companies of every size—from start-ups to multinationals—and in every industry segment—from software to aerospace and defense electronics. The go-it-alone strategy no longer seems to be a viable alternative.

The alliance concept is hardly new, of course. What is new is the fervor and intensity with which electronics companies are putting those ideas to work. Due to the maturation of several trends of the '80s—intensified foreign competition, shortened product cycles, soaring capital investment costs, and the ever-growing demand for new technologies—alliances are becoming an imperative for the '90s.

In this third annual CEO survey, conducted by ELECTRONIC BUSINESS and the professional services firm of Ernst & Young, 455 industry leaders reflect on the pitfalls and opportunities inherent in strategic alliances. They offer some revealing insights into what they have learned about alliances, lessons that could teach your company how to achieve its highest objectives.

Who relies most on alliances?

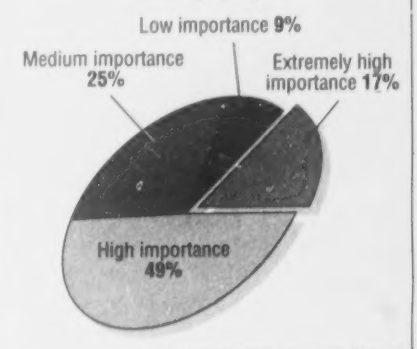
(% ranking importance of alliances as extremely high or high in their strategic plan)

Software	79%
Computers and peripherals	73
Medical electronics and other	71
Industrial electronics	64
Semiconductors and components	64
Voice and data communications	52
Aerospace and defense electronics	52

Source: ELECTRONIC BUSINESS/Ernst & Young

How important are alliances?

(% ranking importance of alliances in their strategic plan)



Source: ELECTRONIC BUSINESS/Ernst & Young

MORE THAN 85% of electronics CEOs we surveyed are involved in alliances, and two-thirds say those alliances figure prominently in their strategic plans. Companies that spend heavily on research and development are more likely to form marketing, joint product development, and technology licensing alliances. The biggest reason: Sizable R&D commitments leave fewer resources for other activities, driving some companies to collaborate as a means to exploit their technologies. Software companies rely on alliances the most.

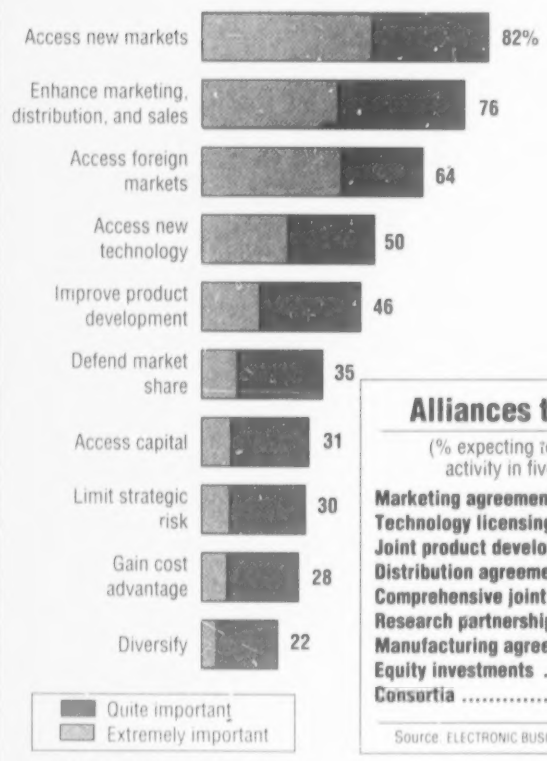
Although alliances between large multinationals grab most of the headlines, smaller companies are more likely to consider alliances critical to their success. For many smaller companies, an alliance with a larger company can lead to faster acceptance of a new technology. The flip side, however, is that an unsuccessful alliance can be far more damaging to the smaller company. □

SINCE MANY OF the goals of an alliance are not quantitative in nature, calculating success is often difficult. A change in market position, however, is something CEOs can point to when measuring success. When we asked executives if their most important alliances have improved their companies' market positions, most say that they have experienced an improvement. In fact, 17% indicate that they have achieved a *vast* improvement in market position through key alliances. Executives at small companies are naturally able to see more dramatic shifts because of their relatively small market share bases. They are three times as likely as CEOs at top-tier companies—those with more than $300 million in revenue—to report substantial improvements.

When executives are asked to rank the importance of strategic alliances to such factors as product quality and customer service, about 15% contend alliances are critical to their companies' success, and more than 40% of those respondents claim that alliances have led to vast improvements in their market positions. Among those companies that consider alliances less important to their companies' success, however, only 12% report vast improvements in market position via alliances.

Why do electronics companies team up?

(% ranking most important reasons for alliances)



Multiple responses allowed

Source: ELECTRONIC BUSINESS/Ernst & Young

Alliances targeted

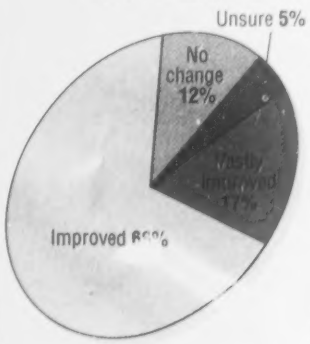
(% expecting to increase activity in five years)

Marketing agreements	81%
Technology licensing	77
Joint product development	77
Distribution agreements	72
Comprehensive joint ventures	58
Research partnerships	58
Manufacturing agreements	58
Equity investments	54
Consortia	36

Source: ELECTRONIC BUSINESS/Ernst & Young

Can CEOs measure success?

(% ranking change in market position due to alliances)



Source: ELECTRONIC BUSINESS/Ernst & Young

THE STRATEGIC ALLIANCE can be a powerful tool throughout a company's value chain—from the supply base to the customer—and can be used to differentiate its products and services. Indeed, value-chain improvements, especially at the customer end, have been a key driver in the alliance trend among electronics companies. Nearly 80% of the respondents claim that their alliances are driven primarily by the need to access new markets and to enhance marketing, distribution, and sales operations; 81% predict an increase in the number of marketing alliances over the next five years. Alliances are crucial earlier in the value chain as well. More than 75% of executives also anticipate an increase in both technology licensing and joint product development agreements.

The forces that lead companies to team up differ slightly by industry segment. In the voice and data communications industry, for instance, nearly half of the CEOs cite prevention of market-share loss as a driver of their alliance strategies. These CEOs also rank access to new markets higher than other industry executives. Semiconductor and component leaders, however, focus more on access to new technologies and improved product development as a motivating force for strategic alliances.

Strategic alliances key to reducing time

(% ranking extremely important reasons for alliances)

	Time-sensitive executives	All other executives
Access new markets	55%	45%
Enhance marketing, distribution, and sales	50	33
Access new technology	44	15
Improve product development	24	11
Defend market share	20	8
Gain cost advantage	13	6

Source: ELECTRONIC BUSINESS/Ernst & Young

EXECUTIVES WHO ARE most constrained by the time required to bring a product to market rely on strategic alliances more than those CEOs whose businesses or products are less time-dependent. Time-sensitive CEOs not only pursue significantly more alliances and more types of alliances, but they also report higher levels of success than other executives. Their companies appear to be more active than others in alliances all across the value chain, but they are especially so in the voice and data communication industry. ◄ □

THE CEO or COO usually handles the early stages of alliances, such as setting goals, selecting partners, and negotiating terms—especially in small companies. The key to successful implementation, however, is the alliance manager—usually a functional vice president. More than 85% of companies with alliances do not have dedicated alliance managers. ►

Who drives the alliances?

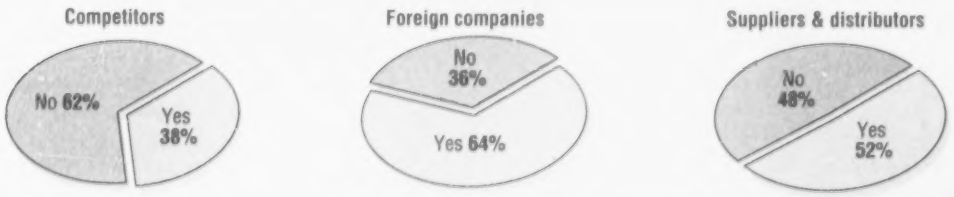
(% indicating who has primary responsibility by task)

	CEO	Functional VP	Alliance manager	Others
Negotiate alliance	60%	16%	5%	19%
Manage implementation	23	42	12	23
Analyze alliance goals	57	14	6	23

Source: ELECTRONIC BUSINESS/Ernst & Young

Who do U.S. electronics companies choose as partners?

(% of respondents)



Source: ELECTRONIC BUSINESS/Ernst & Young

MORE THAN ONE in three companies surveyed say they have established or plan to establish alliances with competitors. The computer and peripherals industry, with its recent megadeals and start-up of the ACE (Advanced Computing Environment) consortium, leads the trend: More than 45% of computer and peripherals companies report alliances with a rival. Two-thirds of all top-tier companies have also teamed up with the competition.

Partnering with a foreign company has also become a popular strategic move for 64% of the companies in the survey, with all industries about equally active. Among those who rate alliances as a critical success factor, about a third have struck deals with Japanese companies.

It's no wonder foreign alliances are hot. Industry leaders, especially in the aerospace and defense electronics and the semiconductor and components industries, say access to foreign markets will become much more important during the next five years. Slowing domestic growth has meant increasingly aggressive global strategies. Perhaps these industries are now eyeing global opportunities that, in the past, were either difficult to pursue or not as attractive as other alternatives.

Only half of the CEOs say they have a strategic alliance with a distributor or a supplier. Given the trend to single-source suppliers, this finding may seem low, but executives seem simply to view their supplier alliances as a given today. □

What makes strategic alliances succeed or fail?

WHAT DO TOP EXECUTIVES see as the most important factors in planning and structuring their alliances? The selection of an alliance partner, according to an overwhelming 75% of our CEOs. The selection process, in fact, consumes significant corporate resources and can last a year or more. The second most important planning factor is a clear understanding of each partner's role; six out of 10 executives in the software segment rate the need for defining roles as extremely important, more so than in any other industry. Developing close ties among senior management, on the other hand, is considered to be extremely important by only 27% of electronics companies.

When it comes to managing and implementing an alliance, only one factor is rated as extremely important by more than half of all CEOs: commitment by senior management. Having a clear understanding of roles, considered by 49% of all executives to be important in the planning stages, is thought to be somewhat less crucial during implementation. Also interesting is that thorough planning—a basic business principle—is rated as important by only 30% of the respondents. The probable reason is that many alliances are struck without hard objectives; instead, they are exploratory in nature, and so begin without a detailed business plan.

Factors that contribute to the success of any relationship, such as good communication, frequent feedback, and alignment of corporate cultures also rate surprisingly low. Although there is much anecdotal evidence that these people-oriented issues are vital in successful alliance management, the survey shows that U.S. electronics executives are unconcerned about, or perhaps are not involved in, alliances that require much cooperation and teamwork.

Alliances do fail, of course. CEOs across all industries and company sizes say that one factor stands out most when they consider their alliance failures: overly optimistic expectations. When goals that exceed the capabilities of the alliance team are set, alliance managers shoulder more pressures and face more obstacles. Approximately half of the CEOs also point to poor communication and lack of shared benefits as important reasons for failure during the implementation stage. The survey revealed a mismatch between top-tier and developing companies. Top-tier companies are twice as likely as developing companies to point to a misunderstanding of principles as an important reason for an alliance failure. Developing companies are twice as likely to say the other party's lack of financial commitment was a critical factor. □

Planning: choose wisely

(% ranking important tasks in planning successful alliances)

Selection of partner	75%
Clear understanding of roles	49
Clear definition of objectives	39
Communication/relationship building	36
Close ties among senior management	27
Clear time line for payback	14

Multiple responses allowed

Source: ELECTRONIC BUSINESS/Ernst & Young

Implementation: talk to top

(% ranking important tasks in managing successful alliances)

Senior management commitment	73%
Communication between partners	48
Clear understanding of roles	44
Thorough planning	30
Frequent performance feedback	16
Attention to day-to-day problems	16
Sharing of resources and risk	15
Alignment of cultures	11
Previous alliance experience	6
Integration of information systems	2

Multiple responses allowed

Source: ELECTRONIC BUSINESS/Ernst & Young

Beware: false expectations

(% ranking important reasons for failed alliances)

Overly optimistic expectations	73%
Poor communication	54
Lack of shared benefits	49
Slow results or payback	42
Lack of financial commitment	32
Misunderstanding operating principles	31
Cultural mismatch	28
Lack of alliance experience	20

Multiple responses allowed

Source: ELECTRONIC BUSINESS/Ernst & Young

Benchmark '92:
The CEO's agenda this year

Ever since we introduced the ELECTRONIC BUSINESS/Ernst & Young executive survey three years ago, our mission has been to add unique insights into the questions uppermost in the minds of U.S. electronics industry CEOs: What are the most important ingredients for competitive success? Which innovative technologies offer U.S. companies their best opportunities? What are the most troubling socioeconomic issues affecting profits this year? What do executives want from government to help their companies?

The answers reveal important, sometimes shifting trends within the industry. For example, capital availability is no longer the major concern it was two years ago. And despite the recession, CEOs are still as unwilling as they were last year to endorse an industrial policy.

What are the competitive success factors?

(% ranking important factors critical to their competitiveness)	1992	Ranking 1991*	1992	1996**
Product quality	67%	3	1	1
Customer service	65	4	2	2
New product development	52	NA	3	3
Technology innovation	50	1	4	4
Attract and retain key people	45	2	5	6
Time to market	42	7	6	5
Capital availability	32	5	7	10
Organizational excellence	32	6	8	7
Proprietary intellectual property	24	8	9	9
Access to foreign markets	22	9	10	8
Supplier relationships	20	10	11	11
Strategic alliances	15	NA	12	12

Multiple responses allowed
* Ranking from 1991 CEO survey **CEOs' anticipated ranking
NA = not available
Source: ELECTRONIC BUSINESS/Ernst & Young

THIS YEAR'S survey reflects subtle but important changes in how CEOs view the ingredients of competitive success. Last year, technology innovation and the ability to attract and keep key people ranked highest in terms of what was considered critical to a company's competitiveness. This year, however, CEOs ranked product quality and customer service as the most important considerations—the result, probably, of what some see as a worldwide obsession with quality and service as competitive tools. Nor are these factors likely to abate soon: Nearly three-quarters of all CEOs expect product quality and customer service to remain critical differentiators five years down the road. □

THE LONG-TERM success of any electronics company clearly is tied to the CEO's ability to identify and capitalize on innovation opportunities. Approximately 80% of executives believe the most promising opportunities lie in the following technologies: advanced telecommunications, advanced semiconductors, high-performance computing, and imaging.

This year, CEOs rated advanced telecommunications highest. The telecom industry's excitement about personal communication networks, wireless voice and data products, and new video services has made other industry segments more aware of the near-term opportunities these technologies offer. ►

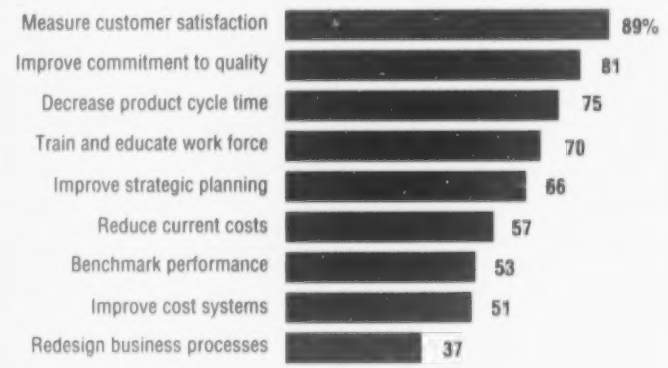
What are the most promising technologies?

(% ranking promising technologies for electronics innovation)	1992	Ranking 1991*	1992
Advanced telecommunications	84%	2	1
Advanced semiconductors	83	1	2
High-performance computing	79	4	3
Imaging technology	78	5	4
Advanced materials	73	3	5
Personal computing **	71	NA	6
Medical electronics	70	7	7
High-density data storage	69	6	8
Multimedia	69	NA	9
Optoelectronics	63	9	10
Flexible computer integrated manufacturing	59	10	11
Superconductors	52	8	12

Multiple responses allowed
* Ranking from 1991 CEO survey **Pen-based computers, wireless laptops, etc.
NA = not available
Source: ELECTRONIC BUSINESS/Ernst & Young

What are near-term management imperatives?

(% ranking important actions for improving performance)



Multiple responses allowed

Source: ELECTRONIC BUSINESS/Ernst & Young

DEVELOPING PRODUCTS and services that ensure customer satisfaction has become a top priority throughout the electronics industry. In findings consistent with last year's survey, CEOs emphasize that creating an effective way to measure customer satisfaction is a vital element in improving company performance; almost nine in 10 CEOs rated this near-term management action item as most important.

At least 75% of the executives also rate improving their commitment to quality and decreasing their product cycle times as important to improving performance. Reducing current costs and improving cost systems does not rate highly among the management imperatives. Perhaps CEOs view costs, as they should, as part of their commitment to improving quality and reducing cycle times. ◀

What's killing profits?

(% ranking problems that affect profits the most today)

Recession	76%
Lack of technical talent	55
Federal budget deficit	51
Interest rates	41
Fluctuation in the dollar	40
Federal trade deficit	36

Last year's top three:
1. Recession
2. Federal budget deficit
3. War in the Middle East

Source: ELECTRONIC BUSINESS/Ernst & Young

THREE OUT OF four CEOs cite the recession as the most significant socio-economic influence on their companies' profits this year. The lack of technical talent, considered second only to the economy's woes, is an issue that was hotly debated in last year's CEO report; this year's findings confirm how serious a problem scarce technical talent has truly become. Despite the fact that the federal budget deficit has ballooned to record-breaking high levels, only about half of CEOs surveyed rated it as a serious drag on their profits. □

AS IN PAST CEO surveys, there seems to be no industry-wide consensus on what government should do to support the industry, except for making R&D tax credits permanent and cutting capital gains taxes. These two initiatives, which stalled in Congress last year, have become top-drawer policy proposals for the 1992 elections.

More than a third of the respondents also want government to strengthen intellectual property laws, a significantly larger number than were calling for this action a year ago. CEOs of software companies are particularly concerned about intellectual property; nearly half want government to strengthen the laws. Interestingly, the survey shows that most CEOs are cool to the idea of an electronics industrial policy. And relatively few executives call for the relaxation of antitrust laws. ▼

What should Uncle Sam do now?

(% ranking important government actions)

	1992	1991*
Make R&D tax credits permanent	61%	66%
Index capital gains tax to zero	57	48
Strengthen intellectual property laws	36	26
Toughen trade negotiating stance	33	35
Increase government spending on technology	22	21
Establish electronics industrial policy	22	NA
Create technology venture capital entity	21	25
Relax antitrust laws	17	13
Create U.S. institute of trade similar to MITI	15	18
Toughen position on foreign direct investment	12	NA
Reduce frequency of reports to SEC	9	NA

Multiple responses allowed
NA = not available

* Ranking from 1991 CEO survey

Source: ELECTRONIC BUSINESS/Ernst & Young

Methodology snapshot:

How we did it and who responded

Last fall, ELECTRONIC BUSINESS and Ernst & Young mailed an eight-page survey to a sample of chief executives, presidents, and chairmen at 3,250 U.S. electronics companies. Responses were received from 455 companies for a 14% response rate. By region, 30% of responses were from Silicon Valley, 15% from Southern California, and 12% from New England and New York. Demographic data on the CEOs surveyed is presented in the tables below.

We want to acknowledge Ernst & Young's high-tech industry and marketing group and management consultant Jon Glasco of Technology Planning Systems in Oakland, Calif.

About Stephen E. Almassy and Ernst & Young

Stephen E. Almassy, national director of Ernst & Young's Electronics Industry Services, assists high-tech companies worldwide with auditing, financial consulting, public offerings, mergers, acquisitions, and strategic alliances. Ernst & Young is one of the largest professional services firms in the U.S. and has 66,000 employees in more than 100 countries. For high-tech assistance, call Ernst & Young at (408) 947-6676. □

DEMOGRAPHICS

Demographics by industry segment and company size

Segment	Number of companies	% of respondents	% of revenue	% of employees	1991/90 growth* revenue	1991/90 growth* employees	Industry segment definitions (% of segment respondents)
Industrial electronics	84	19%	5%	8%	4%	1%	Test & measurement 54%; semi manufacturing equip. 26%; factory systems and other 20%
Computers & peripherals	62	14	22	29	13	-1	Peripherals 57%; computers 37%; other 6%
Semiconductors & components	82	18	8	14	-5	1	Semiconductors 24%; passive components 55%; printed circuit boards 7%; other 14%
Software	81	18	4	5	12	5	Software 66%; CAE/CAD/CASE/CAD/CIM 22%; systems integration 8%; other 4%
Voice & data communications	50	11	3	4	-1	4	Telecom 36%; datacom 46%; other 18%
Medical electronics & other	43	9	17	12	11	1	Medical electronics 35%; consumer electronics 16%; office equipment 5%; other 44%
Aerospace & defense electronics	53	11	41	28	1	-10	Commercial aerospace 10%; military aerospace 25%; military telecom 8%; defense electronics 46%; other 11%

Company size						Company size definitions (Annual revenue, $ millions)	
Top-tier	37	8%	87%	73%	5%	-5%	Top-tier ..... more than $300
Large	42	9	6	13	-5	7	Large ..... $100 to $300
Midsize	84	19	4	7	7	4	Midsize ..... $25 to $100
Small	184	40	2	4	12	5	Small ..... $5 to $25
Developing	108	24	1	3	-35	-6	Developing ..... less than $5

* Not adjusted for inflation

Source: ELECTRONIC BUSINESS/Ernst & Young

COMMENTARY

A new mind-set for electronics executives

Cindy Charles

IF THERE ARE ANY MANAGERS LEFT who still expect the current strategic-alliance "phase" to subside, this year's survey of chief executives should serve as a wake-up call. It also should sound a call to action for the entire industry. U.S. executives must become world-class initiators and managers of strategic alliances if their companies are to compete successfully in the 1990s.

Alliance building is now fundamental to the way U.S. electronics companies conduct business. In every area of operations—from technology and product development to manufacturing and marketing—we are witnessing an explosive increase in competition for strategic alliances. As the survey shows, some eight out of 10 electronics companies now have alliances, and most CEOs are planning or negotiating new ones. The quality of business alliances now plays an essential role in how well most U.S. companies serve their customers in the global marketplace.

U.S. executives, in general, claim to be gaining significant advantages from their alliances, but they also see room for improvement: While eight out of 10 CEOs say they have enhanced their companies' market positions through alliances, very few claim to have scored "vast" improvements. CEOs also express frustration with the return on some of their alliances, including the time it takes to make the partnerships successful.

What's required is a new mind-set that will allow U.S. companies to maximize their alliances in the context of meeting customers' needs in the global marketplace. In recent years, U.S. companies committed themselves to achieving total quality throughout their own organizations. For the rest of the 1990s, the challenge will be to extend enterprise-wide excellence concepts beyond corporate boundaries.

U.S. companies have to relearn and rethink the way they manage. A new openness needs to be established in how they communicate, share information, and plan their strategies with business allies. U.S. companies will need to learn the art of cooperation and team building, even with competitors. At the same time, our global alliances will need to be grounded in a better understanding of cultural diversity. Most of all, the ability to manage across functions—an approach that many U.S. executives have yet to master in their own companies—is now critical to competitive advantage.

But it isn't up to private enterprise alone. Government, education, and industry all need to play a role. U.S. business schools need to devote more resources to understanding alliance management processes, from contract negotiations to establishing effective communications. They also need to graduate managers with a new set of competencies, including foreign languages and other communications skills. Government must reassess tax and anti-trust laws to facilitate global cooperative ventures.

The rules of the game have changed forever. U.S. industry needs to move quickly to form the world-class partnerships needed to compete.

—Stephen E. Almassy, national director of Ernst & Young's Electronics Industry Services

How a good partnership goes bad

Matsushita has pumped $90 million into Solbourne, but poor execution and conflicting goals have prevented the partnership from working as planned

By Peter Burrows

This is a story about an alliance that failed. It's not about villains, although there is plenty of blame to go around. It is about too many bad business judgments, a few conflicting goals, inconsistent communication, and confused allegiances. Taken together, these problems helped doom what at the start looked to be a sure success.

The partners involved are $46 billion Matsushita Electric Industries Co. (MEI) of Osaka, Japan's largest electronics conglomerate, and start-up Solbourne Computer Inc. of Longmont, Colo., which had grown to about $60 million in revenues with 350 employees before a major downsizing last January.

When MEI purchased a 52% share in the workstation maker in 1987, the synergies seemed clear. Solbourne needed money and MEI's manufacturing expertise; Solbourne was an early licensee of Sun Microsystems Inc.'s Scalable Processor Architecture (SPARC) and had lofty goals for the fast-emerging workstation market. MEI also wanted a presence in that market, as well as access to the underlying RISC computing technology for use in future generations of gadgets and appliances for the "home of the future."

Unfortunately, it hasn't worked out that way. After launching an ambitious plan in 1988 to become the Compaq of the workstation world by cloning Sun's popular SPARC computers, Solbourne announced in January that it was bailing out of the workstation world to focus on the niche for Unix-servers. It dismissed one-third of its employees, including most of its management staff, in the process. Some employees say what is left is little more than a U.S. R&D arm for MEI, and the shell of a once-proud high-technology company that has been decimated by too many months of internal strife (see "Beware of confused allegiances," page TK).

MEI, on the other hand, seems to have met most of its key goals, say both MEI and Solbourne executives. While its $90 million-plus investment was a steep price to pay, MEI has obtained its own RISC-microprocessor, world-class design capabilities, and a license to build competitive workstations for its own use. It has even introduced its own Solbourne-inspired workstation for sale in the Japanese market and is reportedly developing a range of SPARC-based laptop and notebook computers as well as high-definition televisions and other consumer items equipped with its new SPARC technology. "We gave them technology and we trained them to use it, and now they're doing everything you'd think a big Japanese company would do," says one former Solbourne employee.

Big money and good intentions aren't enough

Majority shareholder makes a comprehensive joint venture in 1987

Solbourne	
Industry	Unix workstations and servers
1991 revenue	$40 million*
Alliance goals	- Funding - Manufacturing expertise - Distribution in Japan
Matsushita	
Industry	Consumer and industrial electronics, components
1991 revenue	$46,000 million
Alliance goals	- RISC technology - Return on investment

Results Matsushita invested $90 million in Solbourne and got RISC technology in return. However, Solbourne has not achieved most of its alliance goals and has since left the workstation market

*Estimate Source: ELECTRONIC BUSINESS

Maybe. Japan bashing is all the rage these days, but whether MEI meant to suck out Solbourne's technology without regard for the U.S. start-up's long-term health is still not settled. Most observers don't think so, and executives from both camps insist that their partnership is a model of long-term commitment and cooperation—if not results. What's undeniable is that, while MEI has achieved many of its stated goals, Solbourne has not; it still faces a struggle to survive with an unwelcome Plan B.

Why did Plan A fail? Solbourne executives, past and present, insistently refuse to blame MEI. "Matsushita was a great partner," says Dan Wilkie, who was Solbourne president and COO until he resigned during the January restructuring. "It invested close to $100 million in Solbourne, but it left the day-to-day management to us." Solbourne founder and CEO Douglas B. MacGregor agrees. "If anyone

Illustrations by Christopher Bing

hasn't delivered, it's us."

To some extent, MacGregor appears to be right. He and Wilkie failed to predict the predatory pricing practices of Sun and a flood of rivals such as Hewlett-Packard and IBM. Instead, they built up the company on the assumption that it would soon be a $1 billion operation. They had seven layers of management for just 350 people. The running joke among engineers was "we have more vice presidents than products."

OTHER PROBLEMS included a bull-headed insistence on developing proprietary technology, as well as poor project management. At one point during the midst of developing their first workstation, a personnel reshuffling left *zero* designers working on the core microprocessor for weeks, admits MacGregor. Basic management mistakes such as these contributed heavily to the delays and performance glitches that subsequently hobbled the company.

Conversely, problems with the partnership compounded MacGregor's management errors and made Solbourne's success nearly impossible. For starters, the deal seemed crafted more to protect MEI's desire for access to Solbourne technology than to guarantee Solbourne's needs for responsive support. For example, Solbourne met its contractual agreement to involve MEI engineers in all development projects—about 15 MEI engineers have usually been on-site in Longmont—and it delivered a range of technology specified in the partnership agreement. Matsushita, on the other hand, has failed to deliver on its exclusive rights to distribute Solbourne products in Japan, and it did not always provide manufacturing services to meet Solbourne's needs in terms of cost, performance, or timeliness.

James Cook

Solbourne CEO MacGregor takes most of the heat for Solbourne's failures

Until MacGregor made a trip to Japan in mid-1990 to demand the promised manufacturing support, MEI consistently did not match the price and response time promised by local U.S. contract houses, sources say. "I really expected more cooperation from them," says one current Solbourne engineer who, on the whole, gives MEI high marks. "I couldn't understand why their R&D division would give us so much money only to have manufacturing try to earn it back."

Another critical example of conflicting expectations and capabilities occurred during the development of the cutting-edge microprocessor for Solbourne's first workstation, the S4000. In mid-1990, a design was in place that would have given this machine a 25% speed advantage and a six-month headstart over Sun's then-unreleased SparcStation II. However, months after committing to build the device, MEI admitted it couldn't produce the part at the agreed-upon performance, in the agreed upon timetable, or at the agreed-upon price.

In the end, the MPU project took three and one-half years instead of two, sources say, and the S4000 turned out to be a clone rather than a breakthrough product. It was introduced just one month before the SparcStation II, and its system speed of 33 megahertz was roughly the same as Sun's—not the hoped-for 40 MHz.

"We were a few MIPS short and a few months late from a viable fight with Sun," says former director of development engineering Mho Salim, who was laid off in January.

Salim and MacGregor say that internal engineering gaffs were more responsible for the delay than MEI's unresponsiveness, but many others disagree. These critics argue that MEI held undue and counter-productive sway over Solbourne's product direction. "We knew we were going to be a year too late before we finished that processor, and we tried to convince our management to go to an off-the-shelf version" in an effort to extend the time-to-market lead over Sun, says a former engineering manager. "MEI wouldn't

Why a good partnership fell short

Lopsided organizational links

Solbourne design engineers worked with Matsushita researchers rather than a production unit. This helped Matsushita transfer technology but led to delays and production disappointments for Solbourne.

False expections

Solbourne overestimated Matsushita's manufacturing and distribution prowess, while Matsushita had unrealistic notions about Solbourne's design expertise. In the end, both were brought back to earth.

Inconsistent communication

Matsushita provided little input on business issues so as to ensure Solbourne's autonomy, but some say the lack of interchange led Solbourne management to stick to the letter of the partnership without adapting to changing market realities.

Manufacturing inflexibility

Matsushita made many exceptions to the "Matsushita Way" for Solbourne's sake. Still, Solbourne should have relied more heavily on smaller, more responsive third-party manufacturers after Matsushita proved unwieldy in some cases.

Rampant rumor mill

One camp within Solbourne believes Matsushita is steering Solbourne to become its own U.S.-based research lab. Others say Solbourne management has abused Matsushita's largess in a greedy rush to go public. The end result was mixed allegiances, cynicism, and unnecessary turnover.

hear of it. It wanted that MPU."

It is clear that poor communication between Solbourne management and its engineers made matters worse. Despite warnings from engineering, MacGregor refused to discontinue development of the chip, and even fired engineering vice president Bob Thompson for arguing the case too vehemently. MacGregor concedes now that hindsight has vindicated Thompson's view, but "we needed to go for broke, because I knew a me-too product wasn't going to do us much good against larger rivals with economies of scale on their side." He steadfastly denies that MEI was behind the decision to continue development of the proprietary chip.

Senior coordinator Kaz Minami, MEI's top full-time official at Longmont, agrees. "MEI was not consulted until the last moment about the MPU being inadequate or too late. We were told that, although there were problems, management would be able to work them out."

Management did not work them out, however, and many former Solbourne employees accuse MacGregor—a graduate of Osaka University who is considered to have a bright future within MEI—of slavishly following the letter of the contract without testing its flexibility.

"Of all the U.S./Japanese alliances I know, Solbourne had the most autonomy," says a former Solbourne chip designer. "Unfortunately, Solbourne's management didn't take advantage of that autonomy." In one case, MacGregor nixed a proposed two-phase production plan that would have let manufacturing engineers use less expensive, more responsive local contract houses for prototyping and MEI for the volume runs that are their forte.

MacGregor dismisses such charges as Monday morning quarterbacking by people with no access to boardroom thinking: "I never knowingly put the partnership ahead of Solbourne's best interests."

ANOTHER STUMBLING block was the reporting structure between Solbourne's design engineers and MEI. Instead of working directly with a manufacturing unit, Solbourne's engineers worked with MEI's R&D department—which was seemingly more interested in learning about Solbourne's technology than in getting its products to market on time. One result was difficulty in moving requests for production out of MEI's R&D and into the proper MEI manufacturing operation. Even when this was done, front-line managers showed little inclination to interrupt one of MEI's mega-volume production runs to make room for a high-tech, low-volume order from a far-off subsidiary.

"I went over there seven times one year to try and get them to make the necessary investments [to be able to build Solbourne's first workstation], but I could never find anyone willing to stick their neck out and take any responsibility," says a former manufacturing engineer. "Urgency was not their priority, but it was our lifeblood."

Tension between engineering and manufacturing widened the gap in the partnership

Tension between engineering and manufacturing is a fact of life in many companies, but cultural misperceptions widened the gap in this partnership. Given the Japanese's reputation for being the "gods of manufacturing," Solbourne engineers thought MEI would easily be able to build chips and boards that were on the cutting edge of technology. The microprocessor, for example, was the world's first RISC-system on a chip, says Nick Mati, a Solbourne co-founder who has since left. "Looking back, we were far too optimistic about Matsushita's processing capabilities."

Similarly, Solbourne management mistakenly thought MEI would respond to production demands like a U.S. manufacturer. "They are far more process-oriented," says one engineer. "You can't just pay more to get the board built, because they won't alter their build rate for fear of bringing down the quality. Their strength is in mass production, not prototype build."

Conversely, MEI made false gods of Solbourne's designers. "We told them that you can't produce a chip like that in just four months, but they didn't understand," says a former Solbourne designer. "They thought we were such great engineers that the product would be close to perfect the first time through. We knew that wasn't the case." In the end, it took much longer to move the project from engineering to production, and both America's design expertise and Japan's manufacturing skills lost some luster in the eyes of their counterparts.

Solbourne also overlooked a key fact in granting MEI exclusive rights to distribute Solbourne products in Japan: MEI hasn't been a major presence in the computer business since 1964. Despite its vaunted distribution channels for Panasonic and National brand-name consumer goods, MEI has sold fewer than 1,000 Solbourne computers in Japan since 1987.

"I pressed them very, very hard to be more aggressive, but it is not like selling VCRs," says recently resigned vice president of marketing and sales Marc Stevenson. He had targeted $10 million in sales to Japan for 1991, but he says MEI moved less than $3 million. A restructuring of the channel has improved sales over the past six months, he says.

Stevenson, as with many other Solbourne executives, blames such partnering problems on poor execution and diverging business practices rather than on bad intent. Critics within the company paint a darker, more conspiratorial picture of MEI's behavior. Many former employees are convinced that MEI deliberately steered Solbourne's technical direction with little regard for its long-term health. "MEI wanted to keep us at a simmer, and it didn't understand that, in this game, you either go up or down," says one former engineering manager. "If it just wanted an R&D arm, we shouldn't have been selling any product."

The proof, these critics say, is in MEI's highly selective interest in

Solbourne assets. MEI adopted a do-as-you-wish approach to daily business issues, but it retained a tight grip over technology issues and engineering resources. Armed with daily communiques from Minami and the authority that comes with four of seven board seats, executives in Osaka moved fast whenever MEI's interests were threatened, some former Solbourne employees allege. Case in point: When a wave of resignations occurred in the engineering department after a lay-off in December of 1990, some of those who remained received repeated pep talks and promises of career advancement from MEI. This included a New Year's Eve off-site meeting with MEI officials designed to lay out technical directions and, in part, to assure engineers of their future with Solbourne.

Even when MacGregor was down to just a few months of financing and went to Japan to suggest potential restructuring schemes, MEI insisted only that it be able to review and veto any scenario involving the firing of engineers. In the end, MEI agreed to buy all of Solbourne's workstation inventory, and MacGregor opted for a 121-person lay-off that included only a handful of engineers.

MacGregor says it was always his plan to redirect the company to its strength in product development, but some question whether he came to the decision unilaterally. Dan Ganousis, an ASIC design manager who resigned just days after the lay-off, says he and some co-engineers were on the hit-list until days before the announcement, when their names were mysteriously removed. He claims to know the name of the MEI manager who requested he be retained. MacGregor says MEI had no say over individual cases.

What's more, MEI and Solbourne are discussing an ambitious joint research project involving a low-cost workstation platform—a strange move for a company that has just abandoned that market. "On the same day that MacGregor's telling us there's going to be a cutback, I'm in the room with a Matsushita researcher who wants to give $3 million to the engineering staff for this project," says Ganousis. Minami confirms that there have been such discussions.

Despite these developments, the party line on the partnership remains rose-colored in both Longmont and Osaka. "Both of us want to see this company run well, and neither wants to pump more money into a losing venture," says MacGregor. "MEI has already tried putting a pileful of money on the table, and we didn't make good use of it, so now it's time I reestablished my credibility and make the most of our current assets." With the restructuring done, MacGregor expects the company to be profitable in 1992.

MEI has no current plans to extend Solbourne's line of credit or offer other financing until Solbourne proves it can stand on its own. "If it is well managed from here on out," says Minami, "we'll be at the table to talk about providing working capital if it comes to that." □

Beware of confused allegiances

EVERY COMPANY has departmental rifts, but the confusion that comes with a partnership can amplify such tensions to the point that employees are torn between two masters—especially if the employer is on the ropes and the partner is one of the most powerful companies in the world.

Many engineers at Solbourne Computer Inc. in Longmont, Colo., became disgruntled at the structured management style imposed by newly arrived president and COO Daniel Wilkie in mid-1990; they felt closer ties to Solbourne's parent and partner, Matsushita Electric Industries Co.

It's no wonder. Before Wilkie arrived, the company was an engineer's paradise. Founded by Douglas B. MacGregor, co-designer of Motorola's 68020 microprocessor, the company was singularly hell-bent on building a Unix workstation that would outperform the licenser of the underlying architecture they had chosen, Sun Microsystems Inc. in San Jose. "At one point, Solbourne had the finest group of engineers in the industry," says one former engineer who now works for Sun. "Sun still doesn't have everything Solbourne has."

Wilkie, a 17-year IBM veteran who had earned fame as the "father of the PC" for his manufacturing and distribution skills in the early 1980s, quickly brought in professional managers and his vision of corporate balance in an effort to grow revenues and take the company public in 1992. In December 1990, management cut a number of longtime R&D projects and laid off 25 engineers, hiring 20 sales and marketing people at the same time. "Engineering had been clearly dominating this company. We needed to build up distribution and minimize the cash drain," says Wilkie. He says these changes caused revenue to double to $24 million in the next six months.

Some engineers, aware of Wilkie's reputation, had already jumped ship. For those who remained, it became increasingly easy to take sides with the technology-driven MEI engineers with whom they shared their labs rather than the Solbourne managers who seemed intent on holding them back.

"We needed to build distribution and minimize cash drain," says Solbourne president Dan Wilkie

"The management structure made it impossible for me to function there," says one engineer who left last summer. "Wilkie's a good guy, but he doesn't understand anything about a high-tech engineering company. We were the types who kept sleeping bags under our desks; that IBM stuff just didn't work. Our allegiance was definitely to MEI." □

Better together: Big Blue and little Easel

How a small software company forged a successful alliance with IBM in record-breaking time. Persistence was key

By E. B. Baatz

When R. Douglas Kahn, chief executive and president of Easel Corp. in Burlington, Mass., proposed to the company's board of directors in January 1988 that the privately held, 50-person, $3.3 million software company "establish communications" with IBM in the hope of successfully partnering with the 389,000-person, $54-billion multinational, the board concurred: He shouldn't waste his time. And who could blame them? IBM is inundated with requests for partnerships from all over the world every day.

Nevertheless, despite the board's advise, Kahn persevered. Sixteen months later, Easel had a deal that brought in IBM as a 10% equity stakeholder. For its part, Easel enjoyed a worldwide joint marketing and sales effort for its software—a graphical user interface for applications development—and had access to the software development plans of the world's biggest software seller.

IBM is a company that is strongly motivated to partner with other companies. "We view strategic alliances as absolutely critical to our success," says Catherine Lewis, Director of Application Development Marketing for IBM's programming systems line of business. A successful alliance with Big Blue is not guaranteed, however. Nearly 40% of large companies that have alliances with small companies characterize them as failures or as neutral ventures, according to a study of 94 large vertically integrated companies aligned with small venture companies done by Stockman & Associates of Greenwich, Conn., in early 1990.

Small fry succeeds with a giant

Manufacturing and product development alliance begun in 1989

Easel	
Industry	Software
1991 revenue	$28 million
Alliance goals	- Make product an industry standard - Expand distribution - Access to IBM's technical plans
IBM	
Industry	Computers and software
1991 revenue	$64,700 million
Alliance goals	- Access to graphical user interface software - Create customer user access standards

Results Both achieved initial objectives and have entered a second-stage alliance. Where Easel is now a formal strategic partner in IBM's AD/Cycle plan

Source: ELECTRONIC BUSINESS

Kahn's odyssey required more than just perseverance in large doses. Along the way he formulated eight other rules that should be standard operating procedure for any small company seeking an alliance with a large organization. In addition to the obvious need to be an exceptional communicator, you have to find a champion in the big company, know your company's strengths, carefully craft a preliminary business agreement without lawyers, be flexible and willing to compromise, trust your partner enough to take risks, consider the day-to-day implementation by the field sales force, and manage expectations.

Of all Kahn's lessons, however, his persistence in piercing the IBM monolith was like the difference between getting to first base or getting stuck in the locker room. "Keep asking until you get a 'yes'—even after the *final* 'no,' " advises Allan Scherr, an IBM Fellow and vice president of its Technology Worldwide Consulting Practices who was involved with Easel in the early stages of the alliance.

In Kahn's case, this meant calling dozens of people he even remotely knew at IBM. When those efforts failed, Kahn approached Howard Hunger, IBM director of software vendor operations, at an IBM customer conference in the spring of 1988 to talk about the partnership possibilities.

Hunger was interested, but rather than inundate him with papers and conversation, Kahn decided to put

together a special demonstration product to show Hunger the power of his application software. In a few months, a part-time Easel employee had written a prototype graphical interface to IBM's electronic mail system, and Kahn knew it would impress Hunger more than a flip chart or a slide show. Creative communication is much more likely to score a bull's eye when you're trying to get a big company's attention. "In fact, Hunger was so excited, he wanted to take our 'product' with him, which was not what we were selling," says Kahn.

THAT ONE DEMONSTRATION in June 1988 made Hunger a believer. He, in turn, became committed to helping Easel find the right partner within IBM's copious layers. Therein lay the third lesson: Find a champion within the big company. Hunger continually found IBM prospects to meet Kahn. Within a few months, IBM's Application Systems had agreed to be the sponsor, and Hunger, the matchmaker, moved on to other projects.

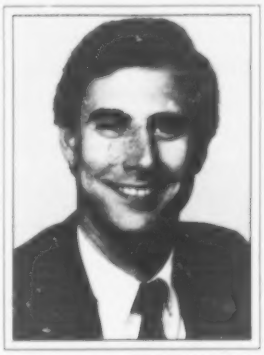
Once Kahn had IBM's attention, he needed rule number four: Deal from a position of strength. Kahn knew the heavy price of failure. The industry tabloids are full of stories of gnats trampled by elephants. Kahn felt strongly that he had a unique, user-friendly product that IBM could not find or replicate easily. He knew his product was his power. "When there were issues that we considered show-stoppers, we could look our partners in the eye and say, 'We cannot do the deal if that's the way its going to be structured,' " recalls Kahn. IBM officials were not able to take total control of the talks. "Power is not size," agrees IBM's Lewis. "Power is the added value that you bring to the table to meet customer needs."

Speaking of power plays, keep the lawyers out of the negotiations until *after* a preliminary agreement or memorandum of understanding has been prepared. The proposed business structure may create problems for the lawyers later on, notes Kahn, but the intent and philosophy in the original agreement will keep the attorneys focused. It changes the lawyers' orientation and makes them more responsive, he adds.

There are limitations to the use of a power position, so a willingness to compromise on issues that aren't a matter of corporate life or death is required. One potential complication between Easel and IBM came out of left field as far as Kahn was concerned. Easel was accustomed to selling a 99-year license to its customers, but IBM wanted a perpetual license. "IBM said, 'We expect to be around for 99 years and don't have any systems in place to collect all the software we've sold by then," says Kahn. "I said, 'Don't worry about it, I don't want the software back in 99 years.' They said, 'We have to worry about it.' That is a circumstance I'd never before encountered in my life: A very large company with concern for a very distant event." In the end, Easel simply went to a perpetual license.

Another legal technicality could have derailed the talks if Kahn had been inflexible. Due to trademark registration concerns, IBM was not willing to commit contractually to using the Easel product name throughout the world. "I looked the business people in the eye and said, 'Okay, I don't care about the exact words in the contract, but I want to be sure you understand exactly how important it is to call the product Easel,' " recalls Kahn. After some give-and-take, everyone agreed to use the Easel trademark, but IBM did not take legal responsibility for any infringements overseas. "There was some exposure for us, but it was a calculated risk we thought was worth taking," says Kahn.

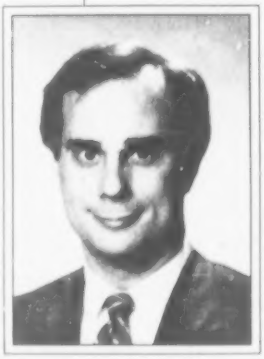
Kahn's flexibility was in part inspired by his belief in the integrity and honesty of his future partner, and a strong sense of empathy—he was always trying to look at each of IBM's requests from IBM's point of view. He realized that, if you can trust your partner, then you can take calculated risks. His sense of trust was challenged by an IBM fetish.



"There was some exposure for us, but it was a calculated risk," says R. Douglas Kahn, Easel's CEO

IBM has this thing about source code. It wants to know every GOTO in the program. For Big Blue, selling someone else's software would be impossible unless it were comfortable with the quality of the source code. Easel, not surprisingly, wasn't too thrilled with the idea of letting IBM have its crown jewels. IBM's Scherr personally needed to get comfortable with the quality of the work already done and technical expertise of the Easel programmers. After extensive negotiations, Easel acceded to IBM's request.

Another contentious issue that IBM and Easel decided to confront head-on at the beginning of the negotiation was how to structure both sides' field sales groups and their compensation. "If you haven't established a good relationship at the field level, then you have a cancer that will erode the relationship," warns Kahn, "no matter how good it is at the senior executive level." Two different versions of the Easel software (an OS/2 standard edition and an extended edition) were sold separately to avoid unhealthy



"Position your products so they do not compete with IBM," IBM's Allan Scherr urges any potential Big Blue partner

"PERCEPTION
IS ALL
THERE IS."

Tom Peters, author of *In Search of Excellence*

Electronic Business

competition between the two sales forces. "Position your products so they do not compete with IBM," Scherr urges any potential Big Blue partner.

Today, Easel-trained IBM sales specialists are encouraged to develop close relationships with the Easel sales team, says Leon Stuckenschmidt, manager of market development for IBM U.S. marketing. Easel, in turn, hired a sales manager and a marketing manager to oversee the day-to-day relationship with IBM.

Kahn and Easel's negotiating stance was strengthened by the fact that he deliberately kept his enthusiasm and high expectations from fueling the employees' and the board's expectations. "We put our business plan together for 1989 with the assumption that there would be no IBM deal, even though, at that point, we were well into the legal negotiations," explains Kahn. "Up to the last minute, I wanted to be able to step back from it all and ask, 'Does this make sense for our business?' " The lesson: Manage expectations.

FOUR YEARS AND many millions of dollars in revenue later, Kahn's company is now a strategic partner with IBM in the every sense of the word. As a one of IBM's seven AD/Cycle Business Partners under IBM's Programming Systems Division, Easel's graphical user interface software is a key tool in IBM's application development plans. The companies collaborate not only in marketing Easel's software, but also in research and development. Revenue from IBM accounted for around 20% of Easel's total sales in 1991, down from 46% in 1989. To keep the deal on track, there are daily applications of the lessons learned. Communication is maintained with monthly update reports by both companies' alliance managers, regular upper management meetings, Easel/IBM pizza lunches at IBM field sales offices, Easel's relatively free and open access to the myriad of management layers within IBM, and frequent communication with customers about the alliance. Mutual self-interest helps, too. □

Mercedes-Benz and Bose thought they knew everything. Surprise!

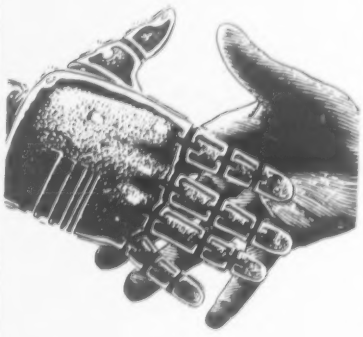
It took six years for them to develop the "ultimate" sound system for the "ultimate" luxury car

By Barbara Jorgensen

A joint venture between specialists in disparate industries—in this case consumer electronics and automobiles—can be a lot more complicated than your typical high-tech alliance. Beyond the need for each other's expertise, they have little in common—their training, technology, and marketing philosophies are usually quite different. What cross-industry partners frequently do have in common, however, is a lack of knowledge about the other's industry. For the partnership to succeed, they must achieve a mutual comfort level by overcoming this "stranger anxiety."

The alliance between loudspeaker pioneer Bose Corp. in Framingham, Mass., and prestigious automaker Mercedes-Benz AG (MB) in Stuttgart, Germany, enabled both companies to conquer their fears when together they developed the ultimate sound system for MB's top-of-the-line S-class sedan. Among some of the hurdles the two organizations faced was a language barrier—not as much in the translation of English to German, but in the translation of audio's subwoofer jargon into the aerodynamic-speak of automaking.

Surprisingly, the two companies' well-known devotion to quality through engineering didn't quell the stranger anxiety between Bose and MB. In fact, the partners found their uncompromising attitude toward technical excellence an occasional obstacle: Optimal performance for one often diminished the performance of the other. Compromise required more than patience; it needed a scientific foundation to the discussion befitting two technology-oriented companies.



Cost implications were only a secondary consideration because of Mercedes's emphasis on the quality of its $70,000 to $120,000 cars and the feedback from customers about disappointing performance of earlier sound systems.

"Mercedes-Benz was very concerned about quality," recalls Sherwin Greenblatt, president and COO of Bose. "It has an image of quality, but its reality was also good—everything was based on engineering." A superior sound system was also crucial for MB because its customers had high expectations.

Typical of a quantification-oriented approach of an engineer, stranger anxiety was first eased by generating data to show the high caliber of the partner. Mercedes conducted a contest among potential sound-system suppliers, and Bose's designs convinced MB officials that Bose was the best. The lengthy exercise also helped Bose determine that the partnership would be worth the effort because of the technical challenge involved. "Mercedes-Benz was very demanding," recalls Greenblatt, "but we play for the long run. We were persistent, patient, and entered the contest—we had never competed at that kind of level before." That's quite a statement—in the mid-1980s, Bose had developed its first custom sound system for General Motors Corp.'s Cadillac line.

What happens when the elite meet

Design, engineering, and marketing alliance begun in 1985

Bose

Industry	Consumer electronics
1991 revenue	$400 million*
Alliance goals	· Expand OEM customer base · Maintain high standards with custom designs

Mercedes-Benz

Industry	Automobiles
1991 revenue	$20,700 million*
Alliance goals	· Offer superior custom sound system · Optimize sound for rear passengers

Results Objectives achieved after six years of development when new sound system was introduced as part of Mercedes top-of-the-line S-class sedan in October 1991. Initial market acceptance is positive.

*Estimate Source: ELECTRONIC BUSINESS

In fact, about 25% of its $400 million a year in revenue comes from contracts with OEMs such as Mercedes, Cadillac, and Zenith.

After establishing a mutual respect between the partners, a successful cross-industry alliance requires each partner to be willing to teach, and to learn from, the other. Bose and Mercedes soon realized that they had to relearn product design and placement. Most of Bose expertise focused on optimizing audio performance for the driver, while Mercedes-Benz wanted an acoustic system offering optimum performance to back-seat passengers as well. The reason? U.S. car owners operate their own car, but European luxury cars are likely to be driven by a chauffeur.

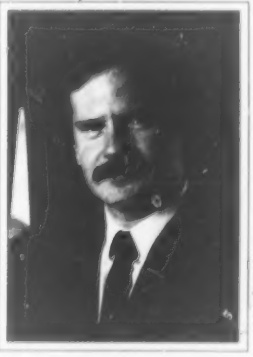
"Mercedes-Benz was very demanding, but we were persistent and patient," recalls Sherwin Greenblatt, Bose's president and COO

MB's insistence on back-seat sound quality forced Bose to rethink its designs, and in the process it had to teach the automakers a few things about acoustics and interior design. Mercedes's tradition of positioning speakers in the rear package shelf meant sound, particularly high frequencies, were localized—listeners could pinpoint its origin rather than being "bathed" in it. Bose insisted on two sets of speakers for the back of the car to prevent localization. As a result, each rear door contains a 3.5-inch speaker and, in addition, four 6.5-inch low-frequency bass transducers are mounted in the rear package shelf.

"MB engineers had to be more flexible than they had been used to," recalls John L. Wilson, OEM division marketing and sales director for Bose. "They are not accustomed to having a supplier tell them the finer points of where things belong inside a car." Adds a sympathetic Roland Utenwoldt, Mercedes-Benz North America product planning manager, "As the car design came together, Bose lost the right to certain mounting locations and couldn't reach its accustomed performance levels."

The quantification-oriented approach continued to provide a methodology for solving problems. For example, Bose's original design included large speakers within front car doors, explains Bose's Wilson, to provide balanced and realistic audio reproduction in an auto interior where glass and upholstery reflect, distort, or muffle sound. MB considered the large speakers unacceptable in a luxury line starting at $70 000 because they interfered with the car's access and egress systems and interior design. Bose demonstrated to Mercedes that smaller speakers would produce an inferior sound. "If you can give someone a scientific explanation for something, they are more willing to accept it," notes Wilson.

After reviewing the data, MB was willing to consider Bose's novel solution to the problem. To project sound toward listeners and augment the output of the smaller door-mounted speakers, Bose designed a two-inch loudspeaker invisibly embedded in the rear-view mirror behind the windshield. "Bose used a technical solution to maintain its desired level of quality and reduced the space they occupied in the car," says Utenwoldt.



Jeffrey Wack

"As the car came together more and more, Bose lost the right to certain mounting locations," recalls Roland Utenwoldt, Mercedes-Benz North America product planning manager

Mercedes and Bose developed an innovative approach to another component of stranger anxiety that bedevils cross-industry alliances. The huge and staid German car maker was skittish about allying with a specialized, private U.S. speaker company thousands of miles away. MB was concerned about Bose's ability to meet volume manufacturing demands and to provide the components on a just-in-time basis.

The partners found a simple but elegant resolution—they worked through a familiar third party. A German plastics company, Reitter-Schefenacker KG (R&S), was supplying Mercedes with its taillight assemblies and was known by Bose to be a top-notch supplier of plastic enclosures. Bose and Schefenacker formed a sub-alliance—Bose manufactures its speaker assemblies, electronic modules, and components in the U.S. and sells the subassembly to R&S. The German company, in turn, molds the speaker enclosures, assembles the system, and sells the system to nearby Mercedes.

Six years of such flexibility and compromises, standard operating procedure for any relationship, culminated with the October 1991 introduction of the new S-Class sedan with the Beta sound system from Bose as standard equipment. Although neither side is willing to say whether their collaborative relationship will be a financial success after the "millions of dollars" in development costs absorbed by Bose because "it's too soon to tell," the company's officials are optimistic. Both Mercedes-Benz and Bose cite cases in which the sound system contributed to a sale. "Both the automotive and audio press response has been favorable," adds Mercedes-Benz's Utenwoldt. The consumer press has been equally enthusiastic. "Startlingly real sound reproduction for all passengers in the car," exclaimed *Popular Science* magazine when it named the Bose system one of the 100 greatest achievements in science and technology last year. □

A buyer-supplier alliance that really works

Conner Peripherals and Compaq Computer show how start-ups can cut their risks while supplying big customers with cutting-edge design

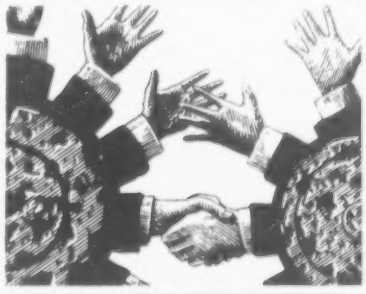
By David Webb

What do you get when you mix a hard-driving Silicon Valley marketer, a cool-headed Texas engineer, and $12 million in cash? In the case of Conner Peripherals and Compaq Computer, you get an example of how customers and suppliers can team up to blitz their way to the top of the list of the fastest-growing U.S. companies.

The lessons in the Conner-Compaq alliance are not limited to those companies. For small, innovative companies, the key is to find a customer with a specific need, prove you can fill that need, then leverage the relationship into a fast-growing market for your product. Larger manufacturers, meanwhile, should ferret out suppliers that offer cutting-edge technologies *and* smart investment opportunities. While Compaq's up-front investment in Conner was designed mostly to provide the Houston PC maker with a supply of custom-tailored high-performance disk drives, the financial payoff to Compaq is hardly small potatoes: The company now holds about 21% of Conner's stock worth $239 million.

The relationship began in 1986 on a handshake between Finis Conner—now CEO of San Jose-based Conner Peripherals—and Rod Canion, then Compaq's CEO and president. Conner had been courting venture capitalists in hopes of launching a company that would produce a disk drive designed specifically for Compaq's computers. "I talked to Rod as a customer, and he offered to make the initial investment," recalls Conner. "It was a perfect match."

The deal allowed Conner to reject the venture capitalists' offers in lieu of a $12 million cash infusion, paid in two equal installments. (Conner raised an additional $27.5 million from venture capitalists in 1987; the company's 1988 initial public offering raised $275 million.)



How Compaq created its own supplier

A buyer-supplier alliance begun in 1986

Compaq Computer	
Industry	Personal computers
1991 revenue	$3.3 billion
Alliance goals	- Receive steady supply of customized, high-performance disk drives - Return on investment

Conner Peripherals	
Industry	Disk drives
1991 revenue	$1.6 billion
Alliance goals	- Reduce start-up risks - Secure high-volume customer - Access disk drive technology

Results. Alliance considered successful, with no important changes in five years. Both have been fast-growth companies, partly because of advantages from alliance

Source: ELECTRONIC BUSINESS

The alliance has dished out some handsome rewards to both companies. On its side of the table, Compaq can count on a steady supply of drives at can't-be-beat prices, essentially built to its own demanding specs. On the other side, Conner was able to launch his company with virtually none of the risks associated with undercapitalization, an unproven technology, or a lack of big-volume customers. "If you have a customer and the cash, and if you clearly understand what the market needs, you dramatically reduce the risk," says Conner. "Our risk was less than any other Silicon Valley start-up I can think of. Otherwise, I don't believe we would have been able to ramp up production to $113 million in our first year."

Conner Peripherals' revenue last year came in at nearly $1.6 billion. Compaq Computer, meanwhile, rode its innovative PC technology (bolstered to some degree by Conner's drives) to sales of $3.3 billion in 1991. Interestingly, Compaq became the fastest-growing U.S. company of all time in 1989. Conner Peripherals took the title away from Compaq.

The success of the Conner-Compaq alliance involved a little luck and fortuitous timing, of course. To begin with, Conner had neither a plant nor a working prototype of the drive—only a design pegged to Compaq's 386-based systems, which called for

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higher drive capacity and performance than what was previously available. Compaq had been buying drives from Control Data Corp.'s drive division, now owned by Seagate Technology Inc., but was not entirely satisfied with the technology.

Thanks to the Compaq alliance, "Our risk was less than any other Silicon Valley start-up I can think of," recalls Finis Conner

Conner also benefited from Compaq's strategy to downsize its portable systems into the realm of laptops and, eventually, notebooks. Although Seagate had written off the market for smaller form factor drives, Conner decided to jump in as a supplier of high-performance 3.5-inch drives, providing a perfect fit with Compaq's marketing plans and critical production schedule.

Striking the alliance required a certain measure of trust on Compaq's part. The computer maker set out to reduce the inherent risks by making sure that Conner understood what was required in the drives. "You can design a product you *think* your customers want, or you can design one that your customers have *told* you they want," says Wayne Collins, Compaq's vice president of worldwide business planning. "We defined what we needed so Conner wasn't left guessing."

"We defined what we needed so that Conner wasn't guessing what the market wanted," says Compaq's Wayne Collins

Such sharing of proprietary information can be risky, of course. The key was trust. "Once the relationship was established, both companies felt comfortable enough to open their kimonos," says Collins.

Under the six-year contract, Conner agreed to sell its drives to Compaq at prices below those offered to any other customer. Otherwise, says Collins, Compaq's investment had no bearing on the companies' relationship. "As far as day-to-day operations are concerned, [purchasing] is free to treat Conner as they would any other supplier."

Nor was Conner bound to Compaq under the alliance; it was free to market to Compaq competitors. As far as Compaq was concerned, in fact, it was to the PC maker's advantage to allow Conner to grow competitively as a merchant market supplier, notes Collins. The result was that Conner was not only able to leverage Compaq as its primary investor and its initial high-volume customer, but Conner also used Compaq as an oracle of demand for open-market personal computer disk drive specifications. The relationship, in other words, gave Conner a first-hand look at what customers demanded from PC vendors—especially the features of disk drives.

That's not to say everything was always rosy between the two companies. In some cases, Conner was Compaq's only source for disk drives, but Conner was also supplying other customers. It wasn't always easy to reconcile production schedules to everyone's satisfaction.

On the whole, though, both companies claim that the relationship has suffered only minor gaffes. Indeed, the terms of the alliance have not been significantly amended in its five-year existence. "The partnership process isn't always blue sky," says Collins. "Sometimes you come to a problem and you have to set a new course. In doing so, you build the relationship." □

Words from on high

Execs are far from unanimous on what government can do, whether megadeals are worth it, and what's ahead for alliances

By E. B. Baatz

1. What is the most important thing government can do to make building alliances easier and more effective for your company?

John McHale
President and CEO
NetWorth Inc.

First, government should provide more tax incentives for R&D. Second, it should develop a clearinghouse for companies looking for strategic partners—a one-stop shop for companies to find out who is involved in particular industry niches and who to contact.

Since Infonet establishes strategic alliances in different countries to provide global business communications services, the communications ministry in each country must ensure fair business practices without favoritism. In addition, governments in developing countries should commit to improve their telecom infrastructures. Without such commitments, Infonet cannot expect new partners in Eastern Europe, for example, to uphold the standards our customers demand.

Jose A. Collazo
Chairman and president
Infonet Services Corp.

Government can play a supportive role, rather than a directive role, in these situations. The Commerce Department, for example, could make alliances move faster by helping to set up meetings in which companies present their wares to potential distributors and partners. I would like the government to move things along—expedite the process, rather than have a policy for or against strategic alliances.

Gabriel P. Fusco
Chairman and CEO
Sequoia Systems Inc.

Orlando Gallegos
President and CEO
Crosspoint Solutions Inc.

The most important thing that the government can do is to help protect intellectual property in every major market of the world. Government must also work to reduce the cost to file and process patents in foreign countries. Our company has estimated that our current costs to file patents in Japan and Europe will be over a half million dollars. Add to that the cost to file patents in the Asia-Pacific countries, which are major emerging markets, and you can see that a cost of more than $700,000 can become a major deterrent to a start-up that is looking to protect its intellectual property.

Peter Behrendt
Chairman, president, and CEO Exabyte Corp.

I see government's role to be relatively limited, with one exception: keeping a strong, stable dollar. One of the keys to successful partnerships is predictability. I find that even in successful relationships, when the dollar weakens—and, therefore, the cost of doing business with an overseas partner increases—the relationship can be strained.

James G. Favier Jr.
President
OCG Microelectronic Materials Inc.

In this period of increased collaboration among companies, government could more clearly define antitrust policy as it relates to alliances. Antitrust concerns seem to be a major roadblock in building alliances and making them effective in the shortest period of time.

2. Which specific strategic alliance do you think has been extremely successful, and why?

Harold A. McInnes
Chairman and CEO
AMP Inc.

The Corning Company has several [alliances] going back many years with Dow, Siemens, and Owens. Why have they worked so well? Each of the ventures brings together capabilities that complement each other and the management styles or cultures seem to be in step. Also, the Corning ventures have been successful because they were formed as stand-alone corporations and report to separate boards of directors.

The Texas Instruments/Hitachi alliance is a good example of a successful and sustainable alliance between two international companies. The extension of their original 16-megabit DRAM program to include 64-Mbit DRAM development opens both companies to additional development talent, manufacturing process improvements, and market access. The alliance strategy is focused, brings the benefits of cost and risk-sharing, and gives each company a win.

Robert P. Akins
President and CEO
Cymer Laser Technologies

The agreement between Motorola and Toshiba appears to be a very balanced deal in which the expectations and needs of both parties were thought out before the agreement was struck. Motorola gained access to a manufacturing process that was later applied to its own products; Toshiba gained access to a technology that broadened its knowledge base. This is critical to be successful.

William J. Warwick
President
AT&T Microelectronics

3. Will the recent or planned "megadeals" improve the U.S. electronics industry's overall global competitiveness?

I am not aware of any good "megadeal" to date. The main alliances consist of U.S. companies giving rights to products or technology in exchange for cash or an equity investment into the U.S. company. They have been fostered because of the lack of investment

Gary Kennedy
President
Orbit Semiconductors Inc.

funds in the U.S. The U.S. investment community is too myopic, seeking strictly short-term results each quarter. To combat this, we should adopt a policy that compensates long-term investors.

Carl McCormick
President and CEO
Group Technologies Corp.

Megadeals, in and of themselves, will not make the U.S. more or less competitive. It is the astute management of one's resources coupled with vision and an appetite for risk that ultimately determines one's competitiveness. What the megadeal provides is a new arrangement of resources to be managed, which opens up new possibilities. These new possibilities do have the potential to greatly contribute to increased competitiveness.

I'm skeptical. Innovation is derived more from lots of small companies with the right kind of entrepreneurial spirit and freedom from all the bureaucracy and baggage that comes with large corporations, as long as they have access to capital. The deals that will move the U.S. electronics industry ahead are the ones between a large corporation with the wherewithal and a small corporation with the incentive and the motivation and the specific talent and the focus.

Kent B. Godfrey
VP marketing
Epoch Systems Inc.

4 What do you think will be the most important changes in strategic alliances during the next decade?

These alliances will actually become "real," with many of the larger ones closely emulating Japan's vertically integrated companies. What I mean by that is that it's commonplace today to announce strategic alliances left, right, and center. Very few of these announcements result in real actions that make a difference. The fad will pass. Over the next decade, strategic relationships with real teeth and real power will begin to happen.

Thomas H. Bruggere
Chairman and CEO
Mentor Graphics Corp.

Larry McArthur
President and CEO
Aries Technology Inc.

If strategic alliances can be made to work, then they can offer an alternative to mergers. I expect that there will be more strategic alliances and fewer mergers in the '90s. Why? Because alliances don't destroy the successful management team of the company you're looking to align with; mergers, on the other hand, do. Alliances provide a barrier to how much you can screw up.

Michael Shealy
President and CEO
Digital Technology Inc.

The need for instant market presence, leaps in technology, and decreasing product life cycles mean that the next decade will become the decade of the value-added business. That means that businesses will have to focus on what they do best while they develop their products faster. If we can rely on other "expert businesses" to provide their own added value, the businesses of the next decade will be able to flourish. From the enhanced vendor partnerships of the '90s to the joint ventures and the alliances of all sorts, these relationships work to maximize the leverage gained by investment in technology.

The "Virtual Enterprise": Your new model for success

Vertical integration is out. Today's markets require a broad fabric of alliances for managing the entire value chain

By L. Scott Flaig

The trend toward strategic partnerships and alliances among electronics and other manufacturing companies is far more than an industry fad or new management experiment. Today, these alliances are actually reshaping the basic nature and structure of the business enterprise and are challenging our old models for success.

The emerging model for successful business is the "virtual enterprise." Its basic goal is to deliver to the customer, in as timely a fashion as possible, the lowest-cost, highest-value product that the entire value chain—not just a single company—can produce. Partners in a virtual enterprise don't focus solely on controlling internal costs and processes. Instead, within the context of cooperative effort, the virtual enterprise manages the total value chain leading to the end-customer through a fabric of alliances with suppliers, manufacturers, distributors, and others.

The results are often better product design, better product quality, improved time-to-market, and almost always superior bottom-line results than for vertically integrated enterprises.

To some extent, this isn't new thinking. Many electronic executives, though unfamiliar with the new terminology, have been reshaping their organizations in light of the advantages of the virtual enterprise. They're increasingly focused on adding value to the specific processes in which their companies excel, while at the same time seeking to off-load and manage the rest of the value chain through cooperative relationships and alliances.

Historically, vertical integration was always seen as the surest way to succeed for a manufacturing company. By bringing inside the organization as much of the value chain as possible, the reasoning went, a manufacturing company could best manage and control its costs and thus achieve competitive advantage. The old thinking held that vertical integration was the only way to completely master your destiny and minimize your vulnerability.

Webb Chappell

The virtual enterprise lets companies focus on what they do best and off-load other functions, says L. Scott Flaig

TODAY, BUSINESS IS drastically different. The complex requirements for success—specialized knowledge, high-value components, improved time-to-market, customer responsiveness, and organizational excellence—have made it much more difficult and even undesirable to directly control all business and manufacturing processes. Nowhere is this more true than in high technology and electronics where capital costs are so high and technology advances so rapid that it's difficult to stay current in one discipline, let alone many.

One result is that the electronics industry has been faster than many to adopt the virtual-enterprise strategy. In essence, this model seeks to master complexity by disaggregating selected functions and building relationships throughout the value chain.

For example, Unisys, one of the three largest computer makers in the U.S., has just announced it will abandon internal manufacturing of integrated circuits for internal consumption. It was unable to add sufficient value in this activity or derive sufficient competitive advantage for

the resources expended. Predictably, this shift to increased dependence on external suppliers requires more cautious management of the supply chain. IBM, for example, has reportedly invested capital in no fewer than 200 important suppliers and partners to protect and enhance the ability of these companies to add value to IBM's customers.

Reliance on partnerships also forces the virtual enterprise to focus its attention outwardly—on its partners—as well as inwardly. Value-adding processes that were once hierarchal elements within an organization now become peer-to-peer relationships between allied companies. Ownership of internal processes must give way to collaboration and communication. Direct management and control give way to shared responsibilities and goals.

LIKE RUNNERS on a finely tuned relay team, each member of the virtual enterprise has his or her own talents, but no single runner has the wherewithal to beat their competitors to the finish line. To carry the analogy further, the team must not only compete together, but also must train together to ensure achieving a maximum performance in competition.

This mingling of expertise enables the virtual enterprise to be much more flexible than vertical corporate counterparts when responding to competitive pressures and emerging opportunities. The virtual enterprise can more easily change from one technology to another more promising technology, it can more quickly shift from one product to another product, and it can better penetrate new geographic markets.

Consider, for example, the virtual enterprise's strength in developing a worldwide strategy. If the skills to supply, manufacture, and distribute your product are already available in target market regions, there's no need to duplicate the local infrastructure. You can also expand globally without making massive investments in capital equipment. Finally, it's a key strategy for attacking protected markets, where partnering with local suppliers and use of local labor may be required either formally or informally. This is especially true in Japan and Europe.

The switch to strategic outsourcing also helps virtual enterprises avoid making investments in antiquated equipment and technology. At the far end of the continuum are fabless semiconductor companies, such as Cirrus Logic, which realize tremendous advantages by relying on partners with state-of-the art process technologies. Contrast that with a philosophy that emphasizes building rather than buying some components. Pursuit of the latter can too often lock an enterprise into outdated technology and render it unable, for capital investment and depreciation reasons, to take advantage of advances in new materials, processes, or product designs.

If the skills to manufacture and distribute your product are already present in target regions, don't duplicate them

Again, the point is that virtual enterprises permit constituent partners to focus exclusively on what they do best. In these circumstances, any business support process or non-strategic added-value process also becomes a candidate for outsourcing to a partner. This can extend to traditional internal overhead functions—inventory management or accounting, for example—and other indirect costs. The overall and desired result, of course, is improved services to the customer and reduced costs to the service supplier.

Ultimately, a powerful network of independent, yet virtually integrated, companies could have levels of business and interlocking equity holdings among all its members. Networked members can coordinate closely in developing future products

What's different and how you'll benefit from the virtual model

Vertical enterprise	Virtual enterprise	Benefits/Changes
Inward focus on all aspects of product development and manufacturing	Outward focus on partner expertise and resources	Result should be faster feedback from customers and better use of scarce resources
Hierarchical management structure within company	Peer-to-peer collaborative management within the alliance	Many managers must be retrained to handle more complex product development and lack of absolute control
Communication links are primarily closed and within the organization	Communication links must be open and spread throughout the enterprise	Adoption of online communication system is a must. Use of open system strategy is required
Technology is closely guarded to maintain control and competitive edge	Technology sharing among partners is required	Trust between partners is required. Payoff is faster, more enhanced product development
Capital spending burden may be large to encompass all processes internally	Capital spending is spread among alliance members	Upgrading is less costly and more likely to happen quickly because individual alliance members focus on what they do best

Source: Ernst & Young and ELECTRONIC BUSINESS

and share senior technicians and intellectual assets. Enterprises consisting of world-class companies are likely to find that their influence offers preferred status with respect to capital formation.

UNDERSTANDING THE benefits of the virtual enterprise is one thing; creating a successful business based on the model is another. Many obstacles have hampered efforts to adopt the cooperative model. For example, vertically integrated organizations usually feared transferring technology to suppliers. The technology, they felt, represented their competitive edge. Likewise, suppliers were less likely to share advances in process technology and other developments with a vertically integrated company. This has changed slowly as companies recognized they could not do all things equally well. Successful strategic partners understand that sharing expertise is critical for making collaborative efforts work.

Adopting the virtual disaggregated model also requires a major strategic reassessment of the manufacturing and business processes required to design and build your products. The decision to create a virtual enterprise should include a compelling new business strategy that permits the enterprise to take full advantage of its new strengths. For example, the need to penetrate global markets or to achieve faster time-to-market may require a new cooperative approach to a company's business, development, and production processes.

Frequently, the model will emphasize retention of critical proprietary manufacturing processes and of potentially high-risk components and processes. Major computer manufacturers such as DEC, IBM, and Hewlett-Packard—unlike Unisys—have taken this approach with certain semiconductor devices. These companies believe innovations in their product are driven by advances in these proprietary components and they, therefore, strive to control critical links in the value chain.

Other important functions that are deemed critical to influencing and managing the value-added, such as planning, CAD/CAM, and purchasing, can also be retained within the company. Other less strategic business processes, such as data processing, transportation, and warehousing, are considered for outsourcing. Clearly, product management is more complex in this model, but it can also be more responsive to product changes, technology advances, and geographic dynamics. Managing this kind of product development process requires the close relationships found in strategic alliances.

New managerial skills, such as peer-to-peer decision making between allied companies, must be developed

Communication between the members of a virtual enterprise is another vital link to achieving success. Consider that a major management goal within the virtual enterprise is the creation of a new disaggregated organization that resembles a vertically integrated company that has "co-located" processes and facilities. That can be achieved only through sophisticated on-line communications and a commitment to using them. It is also important to pursue an "open systems" approach to communication because the virtual enterprise is apt to include many independent and geographically dispersed companies.

The dynamics of the virtual enterprise are still evolving, and management's lack of familiarity with them is a major challenge. For example, managing culture becomes more difficult and problematic as the organization evolves from a single location, to multiple locations, to a virtual enterprise of independent business units. Choosing the appropriate partners is critical. Companies that take part in the virtual enterprise must be committed to the partnership and to the goal of meeting the ultimate customer's needs. A compatible corporate culture, backed up by a "win-win" mind-set on the part of management, is essential to formation of an effective alliance.

Because the demands of managing the virtual enterprise are somewhat new, and because those skills are not typically learned either in school or on the job, many managers must "go back to school" to become effective alliance builders and partners. They frequently lack the skills to manage cooperative, peer-to-peer activities in the context of multiple facilities, functions, international cultures, and independent alliances.

In selecting alliance members for a powerful world-class value chain, the architects of the virtual enterprise must find advocates of contemporary methodologies, technologies, and processes. For example, the effective alliance member will have a real understanding of and commitment to just-in-time and total quality principles, to electronic data interchange, quality function deployment, and quality information systems. DEC and Xerox, for example, have been leaders in formalizing these kinds of principles in their relationships with suppliers, customers, and other strategic partners.

In the final analysis, any company that views cost, quality, time, and globalization as critical issues will need to look to the virtual model for guidance in the 1990s. Nevertheless, there are significant risks that need to be recognized, and it's important that companies understand the nuances of culture and the technology to make the new model work. □

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NOTE

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